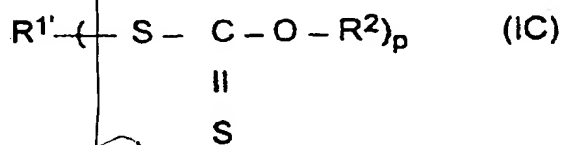
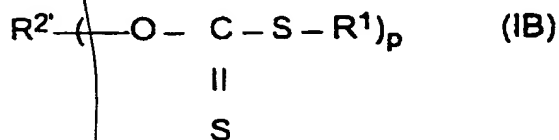
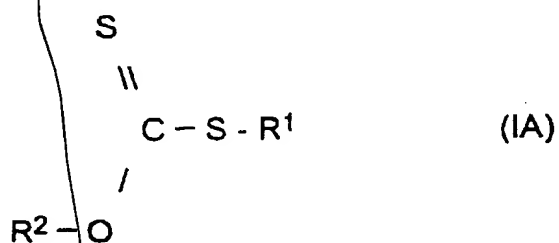


## CLAIMS

1. A process for preparing polymers,  
characterized by bringing into contact:

- at least one ethylenically unsaturated monomer,
- 5 - at least one source of free radicals, and
- at least one compound of general formula (IA), (IB),  
or (IC):



in which:

- 10 -  $\text{R}^2$  and  $\text{R}^2'$  represent:
- an alkyl, acyl, aryl, alkene, or alkyne group (i), or
  - a carbocyclic system (ii), saturated or unsaturated, optionally aromatic, or
  - 15 • a heterocyclic system (iii), saturated or unsaturated,

these groups and cyclic systems (i), (ii), and (iii) being substituted by at least one fluorine atom, chlorine atom, and/or bromine atom,

-  $R^1$  and  $R^{1'}$  represent:

5       • an alkyl, acyl, aryl, alkene, or alkyne group  
          (i), optionally substituted,

or

10       • a carbocyclic system (ii), saturated or  
          unsaturated, optionally substituted or  
          aromatic,

or

15       • a heterocyclic system (iii), saturated or  
          unsaturated, optionally substituted,  
where these groups and cyclic systems (i), (ii)  
and (iii) may be substituted by substituted  
phenyl groups, substituted aromatic groups, or:

alkoxycarbonyl or aryloxycarbonyl ( $-COOR$ ),  
carboxy ( $-COOH$ ), acyloxy ( $-O_2CR$ ), carbamoyl  
( $-CONR_2$ ), cyano ( $-CN$ ), alkylcarbonyl,  
20       alkylarylcarbonyl, arylcarbonyl,  
          arylalkylcarbonyl, phthalimido, maleimido,  
          succinimido, amidino, guanidino, hydroxyl  
          ( $-OH$ ), amino ( $-NR_2$ ), halogen, allyl, epoxy,  
          alkoxy ( $-OR$ ), S-alkyl, or S-aryl groups, groups  
25       having hydrophilic or ionic character, for  
          example the alkali metal salts of carboxylic  
          acids, the alkali metal salts of a sulfonic

acid, polyalkylene oxide chains (PEO, PPO), or cationic substituents (quaternary ammonium salts),

R representing an alkyl or aryl group, or

- 5       • a polymer chain,  
- p is between 2 and 10.

2. The process as claimed in the preceding claim, characterized in that  $R^2$  and  $R'^2$  are substituted by at least one fluorine atom.

10       3. The process as claimed in any one of the preceding claims, characterized in that  $R^2$  represents a group of formula:  $-CH_2R'^5$ , in which  $R'^5$  represents an alkyl group substituted by at least one fluorine atom, chlorine atom, and/or bromine atom.

15       4. The process as claimed in the preceding claim, characterized in that  $R^2$  is selected among the following groups:

- $CH_2CF_3$ ,  
-  $CH_2CF_2CF_2CF_3$   
20 -  $CH_2CH_2C_6F_{13}$ .

5. The process as claimed in any one of the preceding claims, characterized in that  $R^1$  represents:

- a group of formula  $CR'^1R'^2R'^3$ , in which:

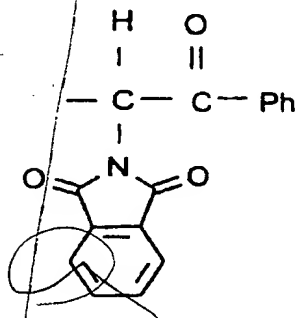
- 25       •  $R'^1$ ,  $R'^2$  and  $R'^3$  represent the groups (i), (ii), or (iii) as defined above, or  
•  $R'^1 = R'^2 = H$  and  $R'^3$  is an aryl, alkene, or alkyne group,

208940-280860

- or a  $-\text{COR}'^4$  group in which  $\text{R}'^4$  represents a group (i), (ii), or (iii).

6. The process according to the preceding claim, characterized in that  $\text{R}^1$  is selected among the groups:

- $\text{CH}(\text{CH}_3)(\text{CO}_2\text{Et})$
- $\text{CH}(\text{CH}_3)(\text{C}_6\text{H}_5)$
- $\text{CH}(\text{CO}_2\text{Et})_2$
- $\text{C}(\text{CH}_3)(\text{CO}_2\text{Et})(\text{S}-\text{C}_6\text{H}_5)$
- $\text{C}(\text{CH}_3)_2(\text{C}_6\text{H}_5)$



7. The process as claimed in any one of the preceding claims, characterized in that the polymerization uses a compound of formula (IA).

8. The process as claimed in the preceding claim, characterized in that the compound of formula (IA) is selected among ethyl  $\alpha$ -(O-heptafluorobutylxanthyl)propionate  
 20  $(\text{R}^1 = \text{CHCH}_3(\text{CO}_2\text{Et}), \text{R}^2 = \text{CH}_2\text{CF}_2\text{CF}_2\text{CF}_3),$   
 ethyl  $\alpha$ -(O-trifluoroethylxanthyl)propionate  
 $(\text{R}^1 = \text{CHCH}_3(\text{CO}_2\text{Et}), \text{R}^2 = \text{CH}_2\text{CF}_3),$  and

ethyl a-(O-tridecafluorooctanyl)xanthyl)propionate

( $R^1 = \text{CHCH}_3(\text{CO}_2\text{Et})$ ,  $R^2 = \text{CH}_2\text{CH}_2\text{C}_6\text{F}_{13}$ ).

9. The process as claimed in any one of the preceding claims, characterized in that the  
5 ethylenically unsaturated monomer is selected among: styrene or its derivatives, butadiene, chloroprene, (meth)acrylic esters, and vinyl nitriles.

10. The process as claimed in any one of the preceding claims, characterized in that the  
10 ethylenically unsaturated monomer is selected among vinyl acetate, vinyl Versatate®, and vinyl propionate.

11. A polymer obtainable by the process which consists in bringing an ethylenically unsaturated monomer into contact with a source of free radicals and  
15 a compound of formula (IA), (IB), or (IC).

12. The polymer as claimed in the preceding claim, characterized in that it has a polydispersity index of at most 2, preferably of at most 1.5.

13. A process for preparing multiblock  
20 polymers, characterized in that the implementation of the process as claimed in one of claims 1 to 10 is repeated at least once, using:

- compared with the preceding implementation, different monomers, and
- 25 - instead of the precursor compound of formula (IA), (IB), or (IC), the block polymer from the preceding implementation.

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15. The block polymer as claimed in the preceding claim, characterized in that it has an index of polydispersity of at most 2, preferably of at most 1.5.

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